

CLAIMS:

Sub
a1

1. In a fiber optic communications network having a transmitter and a receiver connected by an optical transmission line, the receiver having multiple output channels for providing signals to terminal devices, each output channel including a demodulator to detect and recover a received valid signal, and a network including at least one optical amplifier having a shutdown input, a system for detecting a disconnect in the optical transmission line comprising:

means connected to each demodulator for sensing the presence of a received valid signal; and

means for detecting whether a predetermined number of received valid signals are present at a predetermined number of the multiple demodulators.

2. The system of Claim 1 and further including means for activating the shutdown input of the optical amplifier if the predetermined number of received valid signals is not detected.

Sub
a1

3. The system of Claim 1 wherein said means for determining whether a predetermined number of received valid signals are present includes means for formulating a ratio of the number of received valid signals are present to the number of operational demodulators.

4. A fiber optic WDM communications network comprising: multiple wavelength transmitters and multiple wavelength receivers connected by a WDM optical transmission system;

said multiple wave length receivers including multiple channel receivers for providing signals to terminal devices, each of said channel receivers including a demodulator to detect and recover a valid received signal, and for generating an output signal;

an optical amplifier coupled to said optical transmission line, said optical amplifier having a shutdown input;

means connected to said demodulators for sensing the absence of said valid signals,

means for determining whether a predetermined number of said valid signals are present, and for generating a shutdown signal when said predetermined number is insufficient; and

means for applying said shutdown signal to said optical amplifier shutdown input to thereby terminate optical amplifier operation.

5. The fiber optic communication network of Claim 4 wherein said determining means includes:

a counter for counting the number of said demodulators in operation, and wherein said number of valid signals is less than the predetermined majority number of operating demodulators.

Sub A) 6. The fiber optic communication network of Claim 4 wherein said determining means includes:

means for determining whether a predetermined majority number of said demodulators have detected a valid signal and for generating a ratio of the number of valid signals present to the number of operational demodulators.

7. A method for detecting a disconnect in an optical transmission line of a fiber optic communications network having a transmitter and a receiver connected by the optical transmission line, the receiver having multiple output channels for providing signals to terminal devices, each output channel including a demodulator to detect and recover a received signal, and a network including at least one optical amplifier having a shutdown input, the method comprising:

sensing at the demodulator the presence of a valid signal; and
detecting whether a predetermined number of valid signals are present at the demodulators.

8. The method of Claim 7 and further including:
activating the shutdown input of the optical amplifier if the predetermined number of valid signals is not detected.

Sub A) 9. The method of Claim 7 wherein determining whether a predetermined number of valid signals are present includes:

formulating a ratio of the number of valid signals present to the number of operational demodulators.